Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of:	)	
Guidelines for Evaluating the Environmental	)	ET Docket No. 93-62
Effects of Radiofrequency Radiation	)	

SUPPLEMENTARY COMMENTS OF MARJORIE LUNDQUIST, Ph.D., C.I.H.

March 21, 1997

Since submitting my original Petition for Reconsideration to the FCC in September, 1996, I have continued to study the health effects of exposure to microwave and radio-frequency radiation. I have achieved some further understanding of the hazard, which I consider that I ought to share with the FCC at this time—hence these Supplementary Comments.

Also, I am taking this opportunity to make a formal part of this Docket my letter to the FCC of August 13, 1996 [Exhibit A] which warned that this country is even now in the early stages of an epidemic of brain cancer among the users of cellular telephones, and which urged the FCC to take action without unreasonable delay to bring this epidemic to a halt.

Finally, I am formally submitting copies of published reports indicating that a particular segment of society—those people termed *electrosensitive*—have reacted very strongly and very negatively to something newly arrived in their electromagnetic environment just at the time that Omnipoint began operation of its PCS in New York City in mid-November, 1996 [Exhibit B]. There is as yet no *proof* that the start-up of any PCS operation was responsible

for their experience, but I had anticipated that electrosensitive people might react strongly and negatively to such systems, and had publicly warned officials of the City of New York of this possibility in letters that I sent out prior to November, 1996 [Exhibit C]. Furthermore, the description given by electrosensitive people of their sensations is consistent with what I believe to be the mechanism by which nonthermal health effects take place. So I consider that their reactions are completely consistent with those to be expected from exposure to a pulsed (digital) signal at gigahertz frequencies—which describes a PCS wireless telecommunication system!

The new information I am submitting takes the form of a Supplement [Exhibit D] to my 1996 booklet titled **Cellular Telephones and Cellular Towers: Guidelines for Cancer Prevention.**

The discussion in the Supplement to my 1996 booklet explains why there is a much lower brain cancer hazard associated with the hand-held radiotelephones used with PCS systems, compared to those used with the original cellular system that operates at frequencies between 800 and 900 MHz. (It also points out that this does **not** justify a conclusion that the health of people who use a PCS system is better protected than the health of people who use the original cellular telephone system!)

The epidemic of brain cancer among users of cellular telephones of which I gave warning in my letter to the Commissioners dated August 13, 1996, applies only to users of the original cellular telephones, *not* to users of the hand-held radiotelephones that are employed with

PCS systems. The brain cancer risk to this latter group is certainly not zero, but it is much lower than the comparable risk to those using cellular telephones at 800-900 MHz.

At the time I wrote that letter, I was not aware of the advent of PCS systems, nor had I achieved the degree of understanding of the EMF cancer hazard that I possess today. I had knowledge only of the original cellular telephone system that operates between 800 and 900 MHz, and it was the population using these cellular telephones that I considered then—and consider now—to be at risk of being affected by the epidemic of brain cancer that I believe is in progress at this time.

This revised understanding is important in terms of making estimates of the size of the brain cancer epidemic: the number of people affected. This number may be somewhat smaller than I originally estimated, though it is unlikely to be greatly different, because it was based on estimates of total sales of cellular telephones to date, and I don't think any hand-held radiotelephones for use with PCS systems had yet been sold in large numbers in August, 1996.

A letter dated October 8, 1996, from Norbert Hankin, EPA, to David Fichtenberg states: "The thesis that the 1992 ANSI/IEEE recommendations are protective of all mechanisms of interaction is unwarranted because the adverse effects level in the 1992 ANSI/IEEE standard is based on a thermal effect." In my Petition for Reconsideration filed in September, 1996, I argued that if cancer is produced as a consequence of irradiation by non-ionizing electromagnetic radiation, it must be a nonthermal effect, rather than a thermal effect; this means that

no standard based on a thermal mechanism could be relied upon to protect against it.

Mr. Hankin's letter referred to above explicitly states: "Both the NCRP and ANSI/IEEE standards are thermally based, and do not apply to chronic, nonthermal exposure situations." But the public *wants* protection against nonthermal hazards to health, such as cancer!

The FCC's proposed environmental regulation of transmitter EMF is based on standards that themselves are based on thermal effects. Therefore, if there is indeed a cancer hazard associated with chronic exposure to radio-frequency or microwave radiation, the FCC's proposed environmental regulation of wireless transmitters is *not* adequate to protect the public health against this cancer hazard!

What remains, then, is to show that there *is* a cancer hazard associated with exposure to microwave radiation. Toward this end I enclose my own critical review [Exhibit E] of one of the most comprehensive, definitive studies ever conducted of the long-term health effects of exposure to low-level microwave radiation: the lifetime exposure study of rats sponsored by the U.S. Air Force, which was carried out in the early 1980s.

The cancer data from this study were accurately reported, but these data were *not* properly evaluated and interpreted by the scientists carrying out the study! These investigators refused to accept the conclusion that an honest scientific evaluation supported—which was that there was a *real* association between the development of cancer and lifetime irradiation by microwave radiation—and instead preferred to employ an evaluation procedure that was

unscientific, flawed, and mistaken, in order to reach the conclusion that the cancer data from this experiment was inconclusive. In reaching this conclusion, the investigators violated the protocol which had been established at the outset for this study, which called for evaluation of data at a 5% significance level, with all findings that were statistically significant by such a test to be accepted as real effects.

The investigators acknowledge that the cancer data from their experiment are statistically significant not just at the 5% level, but at a level well below 1%; thus the cancer data represent a *real* health effect from microwave irradiation under the protocol for this experiment as it was established at the outset. The probability that such a conclusion is erroneous is only about ½%—a value *much* smaller than the value usually regarded as an acceptable upper limit for the risk of such an error!

In summary, this one experiment alone, if properly evaluated in the standard scientific manner, provides *very strong* evidence of the carcinogenic effect of chronic exposure to low-level microwave radiation! But this study does *not* stand alone! There are numerous *other studies* in the published scientific literature, the results of which *also* support the conclusion that long-term exposure to microwave radiation produces an increase in cancer incidence in the populations so exposed.

I call attention to the deceit practiced by Foster and Guy in their article published in the September 1986 issue of **Scientific American**. This, too, is discussed in my critical review [Exhibit E].

The available scientific evidence is *more than adequate* to support a conclusion of carcinogenicity associated with chronic mammalian exposure, *provided it is evaluated accurately, honestly, and in a scientific manner!* Unfortunately for the public, certain agencies of the federal government do not want a finding of carcinogenicity to be made for microwave radiation, and have been willing to subvert the scientific process in order to prevent scientific consensus on this issue! The worst offender is the U.S. Department of Defense—specifically, the U.S. Air Force.

In earlier comments submitted to this Docket, I described how a 25-year-old epidemic of brain cancer among government contractors in the USA was concealed by the U.S. military, which took over an active investigation by the U.S. Public Health Service and "gagged" all those involved by declaring the issue one of "national security" and classifying it! The facts regarding this, the *first* nationwide epidemic of brain cancer due to RF/microwave radiation in the USA, cannot be brought to light until a Committee or Subcommittee of the U.S. Congress holds hearings on it, because *only* in Congressional testimony can participants testify freely without violating the law against disclosing classified information!

The FCC has a ***duty*** to protect the public health from hazards posed by electromagnetic radiation from transmitters! Indeed, under the Telecommunications Act of 1996, the FCC has *sole authority* to effect such protection! The FCC has a ***duty*** to take notice of the scientific evidence—and also of evidence of bias that has polluted the scientific literature and prevented scientific consensus! The FCC certainly has a duty to consult with other government agencies that specialize in environmental health issues—but it also has a duty to evaluate the

advice it receives from these agencies, in order to distinguish between that which is soundly based and will stand the test of time, and that which is based on ignorance or political expediency, and may well undergo a sudden reversal on very short notice!

To the extent that the EPA's position on the adequacy of the FCC's proposed environmental regulation is based on a lack of scientific consensus regarding the existence of a cancer hazard, it is based on ignorance and biased scientific evaluation of data, making it subject to abrupt reversal at such time as a scientific consensus develops, or when new evidence of hazard is published in the scientific literature. In short, it would be ***foolish*** for the FCC to rely on EPA's position unless this is supported by sound scientific evidence—which it is ***not!***

The FCC cannot foist its responsibility for protecting the public health onto any other agency of government; the Telecommunications Act of 1996 makes that very clear. This means that the FCC *must* accept responsibility for the *evaluation* of data! I have provided evidence of biased evaluation of data [Exhibit E: the rat study sponsored by the U.S. Air Force], of deceit in the popular reporting of scientific data [Exhibit E: the **Scientific American** article by Foster and Guy], of a cover-up of a prior brain cancer epidemic apparently associated with exposure to microwave radiation by military personnel (in my earlier comments in this Docket), and of a hazard to the health of electrosensitive people in New York City that has created a number of "microwave refugees" within the past three months, coincident with the start-up of a PCS system there [Exhibit B]. I have further shown that I can *explain* [Exhibit D] and *predict* [Exhibits C and D] the occurrence of health hazards (including cancer) from microwave radiation associated with wireless telecommunications

transmitters.

If the FCC is to properly discharge its duty to protect the health of the public from the hazard posed by the transmitters of wireless telecommunications equipment, it should do two things:

(1) It should petition the U.S. Congress, communicating the evidence of a cover-up of a nation-wide epidemic of brain cancer a quarter-century ago and requesting that hearings be held by appropriate Congressional Committees or Subcommittees, in order that Congress and the public, as well as the FCC, can learn what happened.

(2) It should proceed to hold a public hearing on the issue of health hazards associated with exposure to radiation of the type emitted by wireless transmitters—which is what I requested in my Petition for Reconsideration. It should ask other government agencies to send representatives to form a panel to hear the testimony and ask questions of the parties testifying, in order to establish the basis for their testimony, so that it can be properly evaluated. The FCC may wish to invite persons outside the government to sit on this panel, as well.

The FCC's goal ought to be the elucidation of those hazards to health that there is good reason to believe accompany long-term exposure to the electromagnetic fields surrounding radio and microwave transmitters. The fact that other agencies of government better suited to undertake this task have not done the job they properly ought to have done does not in any way relieve the FCC of the responsibility for stepping in and doing what needs to be done!

Marjorie Lundquist

Attachments: Exhibits A – E

Lundquist

EXHIBIT A:

Letter dated August 13, 1996, from Marjorie Lundquist to the FCC Commissioners

Lundquist - Exhibit A

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August 13, 1996

Reed E. Hundt, Chairman
and Commissioners Andrew Barrett, James Quello, Rachelle Chong and Susan Ness
Federal Communications Commission
1919 M Street, N.W.
Washington, DC 20554

Dear Commissioners:

The Telecommunications Act of 1996 gave the FCC sole authority to issue regulations with respect to wireless equipment for the purpose of protecting the public health. Yet the FCC is not a public health agency, nor has it the necessary expertise, in-house, to meet this demand placed upon it.

Nor do other federal agencies possess the requisite expertise. And the Telecommunications Act of 1996 expressly deprives local governments of the authority to regulate this aspect of the public health. The result, then, is that the public health goes unprotected--—unless other parties step into the picture. This is what is now happening.

The purpose of this letter is to acquaint you with one such event.

The City of New York plans to lease space on city lampposts to cellular telephone companies as sites for the fixed transmitters required by these systems. An electrosensitive resident of the City has protested that the electromagnetic fields surrounding these transmitters will make it impossible for him to walk the streets; indeed, he fears that his living quarters might even be rendered uninhabitable!

When this was called to my attention, I began correspondence with the City of New York on this matter. The fundamental problem with the City's plan, if carried out, is this: the fixed transmitters will no longer be remotely situated, as has been the case in the past. Up to the present—and with the exception of self-contained, hand-held cellular telephones themselves—distance has protected most people from the adverse health effects associated with proximity to radio-frequency transmitters. The City of New York is unwittingly proposing to deny its residents this traditional protection, with respect to the fixed transmitters it proposes to allow to be mounted on its lampposts.

Every radio-frequency transmitter is surrounded by a *near field*, in which the electromagnetic field is quite complex: that is, its temporal and spatial behavior is complicated. Immediately outside the near field is a region of space called the *intermediate field*; and beyond that lies

Lundquist - Exhibit A

the *far field*, which is also called the *radiation field* because in this region, the electromagnetic field from the transmitter consists only of radiation components.

The temporal and spatial behavior of the electromagnetic field in the *far field* is the simplest of all these regions. The health hazard posed by the *far field* is the least of the three, other factors being equal. This is certainly true with respect to cancer, for example.

The health hazard posed by the *near field* is considerably greater than that of the far field, when other factors are equal; this is because of the convoluted quality of the *near field*, with respect especially to its spatial variability. The gradient of the square of the electric and the magnetic field strengths gets higher as one gets closer to the transmitter; this is a measure of the spatial variability. There is reason to believe that this increases the likelihood of cancer, when biological tissues are exposed to such fields for an extended period of time.

The hazard to health associated with the *intermediate field* lies between that of the *near* and *far fields*—again, when all other factors are equal.

The health hazards associated with exposure to the far fields of various sources are familiar to the public. Sunlight shines upon the earth, exposing us to electromagnetic radiation over a wide range of frequencies. Starlight also reaches the earth, along with the radio emissions of radio stars, the X-ray emissions of X-ray stars, and various types of cosmic rays. We are in the *far field* of all these sources.

The intensity of all these sources, except sunlight, is so low that we pay no attention to any possible health hazard. Most people know that too long an exposure to sunlight at midday can damage Caucasian skin: sunburn is the result. In the *far field* of a radiation source, the *intensity* of the radiation and the *duration of exposure* are the factors that determine the total radiation dose received.

In the *intermediate* and *near fields* of a transmitter, the intrinsic hazard of the electromagnetic field rises. In compensation, to maintain safety, one would expect that either the duration of exposure or the field intensity must drop. This idea has ***not*** been incorporated into existing safety standards!

The reason is that the higher intrinsic hazard to health of the *near* and *intermediate fields* has not been widely recognized. As a consequence, we lack studies of these different kinds of electromagnetic fields that would provide a basis for establishing quantitative health standards that could be applied to *intermediate* and *near fields*. Existing standards properly apply *only* to the *far field*; unfortunately, they have been improperly applied indiscriminantly to *near, intermediate* and *far fields* alike!

Lindquist - Exhibit A

One of the consequences of this error is the self-contained, hand-held cellular telephone that is now in wide use. When these are used, a portion of the human brain lies within the *near field* of the antenna that is mounted in the handset. This is where cancer has developed in the brains of heavy users of these convenient devices. And this has resulted in the filing of lawsuits against the manufacturers of these devices.

I don't know how many tens of millions of cellular telephones are in use in the United States today. I do know that every person who uses them heavily is a candidate for brain cancer—and the cancers that result are lethal! This means that the USA is in the very early stages of an immense epidemic of lethal brain cancer that can be prevented *only* if the use of these popular, convenient devices is curtailed very quickly. If nothing is done—if no regulatory action is taken by the federal government—the United States is likely to experience an epidemic reminiscent of the Black Plague of fourteenth-century Europe in its scope, devastation and effect upon the ecomony of the country!

Because the Telecommunications Act of 1996 gives the FCC *sole* authority to protect the public from the health hazards posed by the use of wireless equipment, the responsibility for preventing this twenty-first-century holocaust of environmental disease rests entirely on *your* shoulders! The five of you, unprepared as you are, carry this responsibility for the entire USA—and indirectly, for the *whole world!*

To give the public the information it needs to help itself, in the absence of action by federal agencies, I have written an instruction book titled ***Cellular Telephones and Cellular Towers: GUIDELINES FOR CANCER PREVENTION*** which tells the users of cellular telephones of the hazard, and what they must do to avoid developing brain cancer. I have told the FCC's Robert Cleveland how to obtain a copy.

Now let me return to the problem that is taking place in New York City. If the City's plan to allow fixed cellular telephone transmitters to be situated on city lampposts is implemented, then it will not be just the handy little cellular telephones that people carry around in their briefcases and purses that cause cancer and other diseases; the base transmitters will be making a contribution, also.

Please read carefully the enclosed correspondence, in order to learn what I project for New York City.

And please consider carefully what your role in this scenario should be. You could prevent what otherwise is likely to happen in New York City, if you ensure that the FCC takes appropriate action in the near future.

Lundquist - Exhibit A

We are faced with an emergency situation! Emergency action is called for!

The time for scientific research is past. Any decision, now, to wait for the results of scientific research not yet begun is a decision to allow the late twentieth-century Cell-Phone Brain Cancer Epidemic to develop unhindered. A refusal to establish regulations that apply to fixed radio-frequency transmitters is a decision to permit a local EMF health hazards epidemic to begin this year in New York City.

My services can be had, if you wish to avail yourselves of them. In the meantime, I shall try to keep disease at bay in New York City, and I shall continue to provide people with the knowledge they require in order to protect themselves, in the absence of effective action by the U.S. government.

Yours for a more healthful environment,

Marjorie Lundquist

Marjorie Lundquist, Ph.D., C.I.H.
Bioelectromagnetic Hygienist

Enc.: Correspondence with New York City officials (and two state officials)

P.S. A bioelectromagnetic hygienist is a specialist in the prevention of diseases arising from exposure to non-ionizing electromagnetic fields, whose mission is accomplished by applying the principles of industrial hygiene to the electromagnetic field.

Lundquist

EXHIBIT B:

(1) Arthur Firstenberg: **Letter to the EMR Community**

Electrical Sensitivity News, vol. 2, No. 1, pp. 6-8.

(2) Arthur Firstenberg: **News from the Cellular Phone Taskforce**

Electrical Sensitivity News, vol. 2, No. 2, p. 9.

(3) Pelda Levey: **My Word**

Electrical Sensitivity News, vol. 2, No. 2, pp. 9-11.

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those that would produce significant and measurable heating, the evidence for production of harmful biological effects is less clear. A number of reports have appeared in the Russian and East European literature claiming a wide range of low-level biological effects. The low-level effects on animals and humans reported in the Soviet and East European literature have included behavioral modifications, effects on the blood-forming and immunological system, reproductive effects, changes in hormone levels, headaches, irritability, fatigue, and cardiovascular effects. However, further research is needed to confirm the existence of these effects and to determine whether they might constitute a health hazard, particularly with regard to long-term exposure.

In recent years some Western scientists have also reported biological effects after exposure of animals and animal tissue to relatively low levels of RF radiation. These effects, often referred to as "non-thermal" effects, have included changes in the immune system, neurological effects, behavioral effects, evidence for a link between microwave exposure and the action of certain drugs and compounds, and a "calcium efflux" effect in brain tissue (discussed below). Experimental results have also suggested that microwaves might be involved in cancer "promotion" under certain conditions. However, contradictory experimental results have also been reported in many of these cases, and further experiments are needed to determine the generality of these effects and whether they constitute a threat to human health. It is possible that "non-thermal" mechanisms exist that could cause harmful biological effects in animals and humans exposed to RF radiation. However, whether this is the case remains to be proven.

One of the "non-thermal" biological effects that appears to be reproducible is the "calcium efflux" effect. This effect can be described as the observation that the release of calcium ions from animal brain tissue is enhanced after exposure to certain low intensities of RF radiation under discrete conditions of frequency and signal modulation. This effect has been observed at RF levels well below those necessary to produce heating of tissue. The extent to which this effect might indicate a hazard is not presently know, and further research is needed to determine the relevance, if any, of this phenomenon to human health.

Another RF biological effect that has received attention is the so-called microwave "hearing" effect. Under certain specific conditions of frequency, signal modulation, and intensity, it has been shown that animals and humans can perceive an RF signal as a buzzing or clicking sound. Although a number of theories have been advanced to explain this effect, the most widely-accepted hypothesis is that the microwave signal produces thermoelastic pressure within the head that is perceived as sound by the auditory apparatus within the ear. It is important to emphasize that the conditions under which this effect occurs **would not** normally be encountered by members of the general public.

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Letter to the EMR Community

Arthur Firstenberg - USA

In what amounts to a massive biological experiment, Omnipoint Communications and Primeco Personal Communications, activated the first Personal Communications Services (P.C.S.) systems in 16 metropolitan areas throughout the United States. This is a new type of cellular service. I can unfortunately state that its effects are already deadly.

In drafting this letter I struggled with whether to include a list of my own symptoms. It seems hard to convey the impact of this technology in any other way, so with some hesitation I will describe what I have experienced: terrible burning pain in the middle of my chest, burning pain in my testicles, tremors, extreme weakness, dry puffy lips, swollen throat, pain in my eyeballs and the feeling that they are protruding from my head, pain in my ears, dizziness, headache, pain and stiffness in every joint. Every inch of my skin was sensitive to the touch. I could hardly eat and I was completely unable to sleep. To save my life I have left New York City. The relief is unbelievable.

I hear similar reports from other electrically sensitive people throughout the New York metropolitan area. Their situations are desperate. Some who are not electrically sensitive also report the same symptoms. This is immensely powerful radiation and like nothing any of us has ever experienced before.

The following cities are blanketed by these microwaves as of last week: Norfolk and Richmond, Virginia; Fort Lauderdale, Jacksonville, Miami, Orlando and Tampa, Florida; Chicago; Milwaukee;

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New Orleans; Dallas, Fort Worth, Houston and San Antonio, Texas; and Honolulu. I understand Omnipoint plans to have the entirety of New York State covered by next summer, as well as Massachusetts, Connecticut, New Jersey, much of Pennsylvania, and Delaware. Between Omnipoint, Primeco, Sprint, AT&T and other competitors, there may well be no square inch of the United States uncovered by this technology in a matter of months. I believe the situation in the rest of the world is similar. Our planet is in grave danger.

I have put together a booklet (85 pages) containing information the telecommunications industry and regulatory bodies have said does not exist, i.e. consistent, repeatedly verified proof of health hazards of low-level microwave radiation compiled by researchers over the last 70 years. Ecological hazards are also included. For a copy of Microwaving Our Planet: The Environmental Impact of the Wireless Revolution, please send $25 to Arthur Firstenberg, PO Box 100404, Brooklyn NY 11210. The money will be used to fund a publicity campaign and legal action.

UPDATE: I have never experienced such torturous pain in my life as during my last week in New York City, nor have I ever experienced such relief as that day in the woods in Suffolk County. During the past few weeks I have been needing shelter. About half the time I have not had it, and now it is snowing and below freezing at night. I urgently need environmentally safe housing of some sort, which at minimum means hardwood floor, no smoking or fragrances, and no TV, computer, microwave oven or cordless telephone in use in the house. Also no nearby radar, transmitting antenna, or major power line. A space on someone's floor would be a blessing, but the environmental needs are not flexible. To continue my work with the Cellular Phone Taskforce I will need access to a telephone for at least the next several months. The work that needs to be done cannot wait.

First, the publicity campaign. This is either going to be the most ignored environmental story in history, or the biggest one ever, and it is probably up to us which. There are reporters following this story who are waiting to see if it has legs or not. **We need numbers, and we need them now. If you or anybody you know has been injured by a cellular tower and is willing to be interviewed by the press, please contact me by mail or phone:** (718) 434-4499, my Brooklyn phone number now has an answering machine on it.

We are also preparing newspaper advertisements, surveys to send to physicians, and leaflets for the streets, in an effort to determine how widespread the suffering is. This all costs money. The Department of Health should be doing this. It is instead being done by a team of people who are either ill or have left their homes.

We have just retained a lawyer to represent us in the first stage of legal action, i.e. a temporary restraining order to shut down this system. For this we also need numbers. We must demonstrate that significant numbers of people are being injured (particularly in New York City). Again, please contact me if you or people you know are ill. We also need contributions toward our legal expenses.

Neither the publicity nor the lawsuit can wait. It is now or never. This PCS technology will be where you are before you can blink, if it isn't there already, and this is an environmental threat unlike any other. Business will not be as usual. According to clinical studies, at least 15% of the population, or 40,000,000 Americans, will suffer radiation sickness, and since there will be no escape from the radiation, that sickness will be permanent and progressive. Injury to the rest of us will show up in other ways. Life expectancy will plummet. Birth defects and sterility will suddenly rise. 1998 will be a silent spring, and no one will know why.

For that is the horror of this new technology, that by the summer of 1997 there will be no place to go to escape from it. For those of us who have already been injured, there is almost no place to go now.

(**Editor's note:** According to a New York Times article on November 18 ("Two New Standards for Wireless in Duel"), New York City's PCS cellular phone system is a GSM type. The other cities mentioned have a Primeco CDMA cellular system. GSM, CDMA, and AT&T's TDMA are variations of PCS digital (pulsed microwave) phone systems being installed throughout the U.S.A.

If you or someone you know had/has an adverse reaction to cellular system activation, please also let me know. If you are ES and are able to use a phone, let me know if you are willing to be contacted by the media. Please remember to maintain the privacy of those you network with, particularly if you are in contact with the media.

As I see it, the ES are in serious need of assistance from legal, media, and government contacts due to the impending land-based cellular phone antennas and satellite wireless communications technology. Our problem is one not only of a disability nature, but a major civil rights issue due to

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the fact that people are running from their homes to avoid new cellular antenna sitings. Some hospitals also have cellular antennas, which I see as a violation of the Americans with Disabilities Act.

On September 19, 1996 I sent a letter to the FCC Commissioners explaining that the ES, by medical necessity, must avoid EMFs and we must have a federal hearing to discuss how we can be accommodated.

I stressed that the lives and health of the ES are at risk with this new technology, particularly for those who have heart irregularities when EMF exposed. This letter was never answered.)

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Microwave Sickness - Part 2

Lucinda Grant

The 1958 Soviet occupational radiation standard of .01 mW/cm^2 (milliwatt per square centimeter) for the frequency range 300 MHz - 30GHz was based on a safety factor of ten; their standard was one-tenth of the radiation intensity at which symptoms were known to occur at that time (1 mW/cm^2 exposure for one hour divided by a ten-hour workday equals .1 mW/cm^2 exposure level, divided by a safety factor of 10).[1,2] Clinical medical evaluations of microwave workers began at the Moscow Institute of Labor Hygiene and Occupational Diseases in 1948.[2] The results of this clinical experience in part assisted in development of the 1958 Soviet occupational radiation standards.[2]

Pre-employment medical evaluations of prospective radiation workers was required by law under a 1957 Order of the Minister of Health - USSR "...in order to prevent occupational diseases."[1]

According to this Order and added suggestions from the Moscow Institute, applicants who had blood diseases, epilepsy, cataracts, central nervous system diseases, endocrine diseases, ulcers, glaucoma, cardiovascular injuries, etc. were considered unfit for work with ultrahigh frequency (300 MHz - 3000 GHz) generators as the radiation exposure could exacerbate these conditions.[1] However, by 1973 one researcher (Gordon) at the Moscow Institute of Labor Hygiene and Occupational Diseases reported that the group of microwave-exposed workers who began employment after 1960 were not clinically healthy—after the pre-employment medical evaluation law and the 1958 radiation standards were in force.[3] Proposed reasons why the workers were unhealthy focused on the possibility that the 1958 radiation standards, which were still in force, were inadequate or that the health problems were due to intermittent radiation exposure typical of the work.[3] Soviet studies had previously determined that intermittent radiation exposure was more biologically damaging than continuous radiation exposure, when energy and exposure time were the same.[3]

Over the years, the Soviets medically evaluated more than 1000 microwave workers.[2] Regulations were in place by 1958 requiring radiation workers be given at least one annual medical exam to assess their health.[1] Workers who developed an illness that was aggravated by radiation exposure at work were allowed a leave of absence or a work transfer.[1]

The occupational microwave standard of .01 mW/cm^2 was the daily limit for exposed Soviet workers. The Soviet public's radiation exposure limit was .001 mW/cm^2.[2,3] In contrast, the new U.S. public's radiation exposure limit under the Federal Communications Commission (FCC) standards of August 1996 is 1 mW/cm^2.[4] The Soviets were more conservative in their standards assessment; they considered variables such as pre-existing health problems which could increase a person's risk of developing non-thermal radiation-induced illness and allowed a safety margin within their standards to reduce this risk.

The difference between the 1958 Soviet radiation standards and the U.S. standards of that time was explained by one Soviet researcher as simply that the U.S. standards were solely based on protection from the thermal (heating) effect, ignoring non-thermal effects.[3] A recent letter from the U.S. Environmental Protection Agency (EPA) states that the current U.S. FCC radiation standards are also solely based on considerations regarding a thermal effect. The current FCC public exposure level of 1 mW/cm^2 was recommended by Bell Telephone Laboratories for workers in the 1950s.[2,5] Bell's calculations considered environmental variables that could increase the heating effect (air movement, temperature, and humidity) as well as physical work. Their guidelines were to avoid radiation exposures exceeding 10 mW/cm^2, only occasionally become exposed to levels between 1-10 mW/cm^2, and allow unlimited exposure only at radiation levels below 1 mW/cm^2.[2]

Conversely, the Soviets were particularly concerned about the cumulative effects of non-thermal radiation doses over time, including reproductive and genetic effects.[2,3,6] By 1973, a Soviet researcher

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News from the Cellular Phone Taskforce

Arthur Firstenberg - USA

Publicity. Pelda Levey's Op Ed piece entitled "FCC ignoring health effects of cell phone antenna towers" appeared in the Hartford Courant on February 12. Our Town newspaper in New York is doing a story on this, appearing February 19.

Meetings. The Cellular Phone Taskforce meets on the first and third Sundays of each month. Contact Jimmy Haller at (201) 701-1529 for time and place of meetings.

Other activity. Our New York Press classified ad has been running since Christmas and has produced over 100 phone calls from men and women in all five boroughs, Westchester and New Jersey. All have similar stories of becoming ill suddenly in mid-November and being unable to shake the illness. All report that their friends, relatives, and colleagues are also sick and that this "unusual flu season" is the talk of the town. Many people have headaches for the first time in their lives. Dehydration, sometimes severe, has sent some to the emergency room. Chest pain has made some fear they were having a heart attack. A few also have itchy rashes all over their bodies. The elderly are particularly affected. I have gotten several calls from older people whose breathing has been affected severely and who can't leave their homes.

A disability discrimination complaint against the Federal Communications Commission was filed by the Cellular Phone Taskforce on February 3. The complaint states that the Radiofrequency Safety Guidelines adopted last August 6 by the FCC discriminate against the electrically sensitive.

News from the industry. Omnipoint's coverage map indicates there is already roaming service (i.e. other compatible PCS systems) available in San Diego, Honolulu, Knoxville, and most cities in North and South Carolina. The latest issue of Iridium Today boasts that Motorola's first three low earth orbit satellites are up there. The City of New York issued a Request For Proposals on the lamppost project November 23. Three thousand lampposts, traffic lights, and highway signs will carry new cellular antennas this summer. Metricom is already using the lampposts in San Francisco, Seattle, Corvallis, Eugene, and the District of Columbia to provide wireless Internet service.

Microwave hearing, I discovered, can be relieved by a close fitting metallic hat. I improvised one out of aluminum foil. It is an easy way to verify the electronic source of these sounds, and has convinced me the Taos Hum is microwave effect.

My own travels, I hope, have ended. I am looking for housing in the area of Norwich, New York. I have been dismayed to find cellular towers virtually everywhere I went, even in forested areas where there are no people, throughout New York, Pennsylvania, West Virginia and Vermont. I carried a cellular phone with me, donated by my nephew Mark, to indicate signal strength. I visited the National Radio Astronomy Observatory in West Virginia, as it is supposed to be in a radio quiet zone, only to discover that the area without cellular reception is actually a very small unpopulated area, and that the electronic noise in my head was still there.

Needs. We STILL need a lawyer to represent the large numbers of people who are being injured. Please leave a message for me at (718) 434-4499 if you are an interested lawyer or you know one.

I would like to thank the many people who have sent me contributions, which have helped with the costs of phone calls, postage, copying, advertising, legal consultations, and keeping Microwaving Our Planet in print.

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My Word

Pelda B. Levey - USA

(Editor's note: This article is reprinted from the

LUNDQUIST - EXHIBIT B

January 1997 newsletter of the Human Ecology Action League - New York City Chapter. Reprinted by permission. Copyright © 1997 by New York City HEAL.)

A COMPUTER IS NOT A FIT DOMICILE FOR MIDDLE-AGED LADIES AND OTHER LIVING THINGS

Well, they've gone and done it. They've made my City the equivalent of a Computerized Apple, and I can no longer live in it. Who woulda thunk?

On November 15, 1996 the gods of all that is righteous and good in wireless communications laid on Our Fair City a grid of radiation-emitting personal communications antennas. Lodged atop small buildings or perched at the third floor level of taller buildings and located every five or ten blocks, these antennas now criss-cross all five boroughs and much of the rest of this area, silently bombarding all of us with microwave radiation every step of our way. The purpose of this radioactive shower is better reception when we paste cellular phones to our ears to tell our live-ins and spouses which topping we prefer on our pizza delivery tonight.

I'd been feeling especially good in the months before the microwave incursion and was quite puzzled a few days before the 15th when I started feeling nauseous, unsteady and lightheaded in the streets. I didn't know what was hitting me and was desperately trying to deny that something was wrong. I never learn.

THE RAT FLUNKS THE TEST

Only later did I figure it out. Apparently the communications company was field testing the system, and this sensitive laboratory mouse wasn't doing too well in the experiment. Then the company turned the system on full force. For several days I teetered symptomatically. I even dared to hope that I might escape the brunt of the ill effects, until—whammo—the microwave radiation hit me like a ton of —electromagnetic fields. Suddenly I felt as if I were living inside a computer. My thyroid swelled. My throat, neck and glands hurt like crazy. For a nanosecond I thought I could live with these symptoms. But, not so fast. Apparently this new antenna system had a bonus in store for me: a big, shiny, new EMF symptom I'd never experienced before: My insides now felt as if they were being raked up and down with an ice scraper every minute of the day. Clearly this was not going to be a radioactive picnic.

THE RAT GETS KICKED OUT OF THE LAB

By the 19th of November my life had pretty much turned to the proverbial excrement. I knew I had to get out of the range of the damaging microwaves. Where to flee is always the question for the suddenly-made-homeless environmentally ill.

I'd recently tolerated 45 golden minutes at my 40th high school reunion in northern Connecticut, and had survived my first overnight in six years in my mom's liberally camphored, wall-to-wall carpeted, but welcoming apartment. If she would allow it, I would have to give her place a shot. I am a lucky daughter. She would, and I did.

ON THE ROAD: MERRILY WE ROLL ALONG

Into shopping bag after shopping bag went a week's supply of tolerated groceries from Whole Foods. Into a new suitcase which I prayed I could tolerate went my pillow, my much-washed sheets, towel and blanket, a few tolerated pieces of clothing, shoes and boots. Into a spare Moishe's Moving carton went my typewriter, some files I was working on, envelopes, paper, blank file folders, stamps, a few books and magazines, and my Rolodex. Ready or not, I was New England-bound. My sainted brother-in-law found me a wonderful driver with car, since I can't tolerate trains, buses or planes and don't own my own wheels.

And so we set out, windows open in a torrential rainstorm, me in the back seat grinning maniacally as I endeavored to ignore the aromatic ghost of recently removed car air fresheners.

When we arrived, my son, who had made the trip with me, whipped out of his knapsack the greatest gift this refugee could have received: a Manhattan telephone book. I was launched. I just didn't know where I would land.

DRIVING FOR DISTRACTION

To retain the rapidly depleting shards of my sanity, I had a goal for my Connecticut sojourn: I would get back my driving skills. Fortunately my mom's car is 20 years old, the perfect conveyance for a chemically and electrically sensitive canary. I'd always hated that car for its annoying habit, even in its youth of conking out on me as it rounded corners. I arrived on a Sunday. Bright and early Monday morning, I was behind the wheel, masking my

LUNDQUIST - EXHIBIT B

insecurity with a stream of nasty curses maligning the parentage of said vintage Pontiac. By Wednesday I was singing hosannas to the old gas guzzler, grateful that it had no computer whatsoever, and that it turned over like a dream ever morning on the open lot. By Friday, I was driving in a snowstorm, trying womanfully to forget the fact that I was rapidly reaching chemical overload, and would probably have to plan within days to flee somewhere else.

(Editor's note: Pelda and others are in need of MCS/ES suitable housing. If you have an extra room to rent or other accommodations, please let me know.)

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ENDNOTES

• **Department of Energy EMF Conference**-During November, 1996 the annual U.S. Department of Energy's EMF conference convened in San Antonio, Texas. Presentations by scientists and medical doctors from the USA and many other countries centered on ELF (extremely low frequency) biological effects research categorized as follows: carcinogenesis, gene studies, neuroendocrine studies, mechanisms, dosimetry and exposure assessment, field management and public policy, and human studies and epidemiology.

In addition, eighty-eight poster presentations regarding these topics were on display. Although none of the formal presentations appear to be specifically about ES, three of the poster presentations highlighted ES. These were from (1) Dr. William Rea, Environmental Health Center, Dallas TX, (2) James Beal, EMF Interface Consulting, New Orleans LA, and (3) researchers at the National Institute for Working Life, Solna, Sweden.

Sweden's presentation is particularly important as it represents the results of a prospective study of 706 young, newly hired electrical utility workers. The study assessed nervous system symptoms over a nine-year period using an initial medical exam and questionnaire with 3-year follow-ups. Work tasks and field measurements were used to determine average electric and magnetic field exposures. Four hundred fifty-five male workers completed the nine-year study. Results after six years indicated that "neurasthenic" symptoms (per Soviets: generally fatigue, headaches, irritability, drowsiness, heart pain, etc.)[1] were higher in the group with the highest magnetic field exposure (greater than 12 milligauss). Dizziness correlated with electric field exposures of more than 30 Volts per meter for 2.5 minutes or more daily. At nine years, neurasthenic symptoms remained highest in the group most exposed to magnetic fields, with less exposed intermediate groups also developing an increase in these symptoms.

Soviet research in 1966 by Asanova found similar symptoms in 400-500kV hydroelectric workers: headache, fatigue, asthenia, drowsiness, tremors, hyperhidrosis, cardiovascular shifts, and dermographism.[2]

A summary of the 1996 US conference proceedings is available free from W/L Associates, Ltd., 7519 Ridge Rd., Frederick MD 21702-3519; Phone (301) 663-1915. Also, you may contact W/L Associates requesting to be added to their mailing list when the Call for Papers becomes available for presentation submissions in the next DOE EMF Conference, November 9-13, 1997, in San Diego, CA.

Reference

1. Petrov, I.R., ed. Influence of Microwave Radiation on the Organism of Man and Animals. VA: National Aeronautics and Space Administration, 1970.

2. Library of Congress. Washington, DC. (Aerospace Tech. Div.) Soviet Research on The Neural Effects of Microwaves. Washington DC: LOC, 1966, p. 24.

• **Tips on Cellular Antennas**-Wireless technology and its antennas are increasing at a rapid rate throughout the USA with no end in sight. At this time, it seems that the digital cellular technology is the most troublesome for the ES, particularly the GSM variety. The ES need to be heard via news media and your local members of Congress as soon as possible. The following tips may help: Contact your local EMF activist groups for assistance. Contact the EMR Alliance in New York for more regional EMF sources (Phone: (212)977-5541, Address: 410 W. 53rd St., Suite 402, New York NY 10019). Network with ES Network members, particularly regionally.

Also, contact your local city and county planning and zoning offices. Find someone there who will listen seriously to your concerns about the antennas—ask to talk with a planner. Explain that you are concerned about where the antennas may be placed in the future due to your health—explain about electrical sensitivity (ES). Ask them what regulations are in place now for antenna placements. Suggest that they need more information about ES and EMFs. Offer to drop by to talk with them and bring information they can review. Give the planning and zoning offices a letter with name, address, and phone number advising them that you want to be contacted regarding any future developments/hearings about antenna placements or about new antenna regulations, due to your medical condition. This letter

Lundquist

EXHIBIT C:

(1) Letter dated September 13, 1996, from Marjorie Lundquist to Rudolph W. Giuliani, Mayor of the City of New York

(2) Letter dated September 16, 1996, from Marjorie Lundquist to Margaret A. Hamburg, M.D., Commissioner of Health, City of New York (together with 3-page Protocol)

Lundquist - Exhibit C

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September 13, 1996

Rudolph W. Giuliani, Mayor, City of New York
City Hall
New York, NY 10007

Dear Mr. Giuliani:

Enclosed are letters I have written to Ralph Balzano, Commissioner of Information Technology and Telecommunications; to Paul Crotty, Corporation Counsel for the City of New York; and to Mark Leeds, Director of the Mayor's Office for People with Disabilities.

My concern is that Mr. Balzano's apparent lack of concern for the health/safety implications of his project—leasing lamppost sites to cellular telephone companies for location of base transmitters—may expose the City of New York to expensive legal problems in the not-very-far-distant future, at the same time that it creates a hazard to the health of New York residents.

Yet inexpensive evaluation, if undertaken now—during small-scale system trials—could not only provide extremely useful information about the degree of hazard that these transmitters pose to the public at the proposed lamppost sites, but could also clarify the extent to which electrosensitive individuals—a group disabled by hypersensitivity to electromagnetic fields—would be adversely affected.

Mr. Balzano has not responded to my letters expressing concern about the health hazard that may accompany the successful accomplishment of his lamppost-leasing project. This conveys the impression—rightly or wrongly—that he is indifferent, or possibly even hostile, to whatever hazards to health the fixed transmitters that his project will place on city lampposts may pose to the public.

The co-operation of the Department of Information Technology and Telecommunications will be necessary, in order to conduct the health hazard.field evaluation of the test transmitters that ought to be carried out as an adjunct to the operating system tests on the two small-scale test set-ups that have been established (one in Brooklyn and one in lower Manhattan, according to a newspaper report). I have written to Margaret A. Hamburg, M.D., Commissioner of Health, to outline the testing that needs to be done at this time.

Failure of the City of New York to carry out an appropriate health hazard evaluation at this stage could have strong negative financial implications for the City of New York at a later date, as I discuss in my enclosed letter to Mr. Crotty.

Lundquist - Exhibit C

Perhaps it would be appropriate for someone from your office to impress upon Mr. Balzano the importance of taking care to see that the health implications of his project are properly assessed at an early stage—certainly, before any contracts with cellular telephone companies are signed!

Yours for a more healthful environment,

Marjorie Lundquist

Marjorie Lundquist, Ph.D., C.I.H.
Bioelectromagnetic Hygienist

Enc.: my letter to Ralpho Balzano, Commissioner of Information Technology and Telecommunications, dated Sept. 13, 1996
my letter to Paul A. Crotty, Corporation Counsel, dated Sept. 13, 1996
my letter to Mark H. Leeds, Director, Mayor's Office for People with Disabilities, dated Sept. 13, 1996

xc: Ralph Balzano, Commissioner of Information Technology and Telecommunications
Paul A. Crotty, Corporation Counsel
Mark H. Leeds, Director, Mayor's Office for People with Disabilities
Margaret A. Hamburg, M.D., Commissioner of Health

Lindquist - Exhibit C

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September 16, 1996

Margaret A. Hamburg, M.D., Commissioner
Department of Health, City of New York
125 Worth Street
New York, NY 10013

Dear Dr. Hamburg:

At this time, two small-scale tests of cellular telephone transmitters are in progress, if newspaper acounts can be believed. The City of New York ought to be conducting a health hazard evaluation during these small-scale tests, in order to obtain the data needed to assess the likely hazard these transmitters will pose to the populace—and especially, to electrosensitive individuals—when numerous such transmitters are mounted on city lampposts, as the current plan calls for. Presumably, the City's Department of Health ought to be conducting the evaluation.

The reason for acting *now* to obtain this information, rather than waiting until the full system is operational, is so that if the evaluation indicates that these lamppost-mounted cellular telephone transmitters *are* likely to pose a hazard to the health of the populace, there will be an opportunity to make modifications to the cellular telephone transmitter siting plan so as to reduce the health hazard they pose. I have grave reservations about the wisdom of siting these transmitters on lampposts, but at present, there is an absence of data to indicate whether my reservations are well-founded.

A *forbidden zone* needs to be established around each trasmitter, to keep people out of the *near* and *intermediate fields* of these transmitters. (because these are more hazardous than the *far field*). The question that needs to be answered is: How large should the *forbidden zone* be?

In my first letter on this subject—addressed to Ralph Balzano, dated August 9, 1996—I suggested that the City of New York engage me to make a theoretical calculation of this. I have had no reply to that letter.

An experimental approach to the matter can also be employed, provided appropriate instrumentation is available. The insrument needed is a "near field detector" of some kind. It is exceedingly unlikely that the NYC Health Department possesses such an instrument.

However, the City of New York *does* have another valuable resource: its electrosenstives!

Lindquist - Exhibit C

Each electrosensitive individual is an intelligent EMF detector, but none has been in any way calibrated, so that we know what kind of fields that individual is detecting. There is likely to be a variety of types of electrosensitivity, but I suspect that virtually all electrosensitives will respond to microwave frequencies. What we need to discover is whether most of them are responding to the near and intermediate fields only.

I am aware of one electrosensitive woman—whose condition is clearly genetic, because she has suffered from it all her life, as has her sister—who is sensitive to the far field. All other electrosensitives I am awaare of seem to be sensitive to electromagnetic fields only close to a radiating radio-frequency source, from which I infer that they are responding to some field parameter which is much higher in the near and intermediate fields of a transmitter than in its far field. But this inference on my part needs to be field-tested.

Since electrosensitive individuals in New York City are spearheading the resistance to the City's plan to lease lampposts as sites for cellular telephone transmitters, it seems appropriate for New York City to do some field-testing of electrosensitives, utilizing the small-scale test set-up that currently exists at two different sites in the City.

Of course, such a plan requires the co-operation of at least one electrosensitive individual, so I phoned Arthur Firstenberg to find out how he felt about participating in such an excercise. Arthur is not the first electrosensitive I have made such an inquiry of; some electrosensitives are simply unwilling to subject themselves to the experience. I was delighted when Arthur told me he would be very much interested in seeing the data from such an experiment and so would be willing to participate!

Arthur Firstenberg was a medical student when his symptoms of electrosensitivity first began to appear. Things got so bad that he could not continue his medical studies. He had to get far away from the offending electromagnetic fields in order to recover his health, and only then dared move back into the city. I tell you this so that you will understand that, had matters turned out a bit differently, Arthur Firstenberg would have been a professional colleague of yours—a fellow physician!

As you must know, there is a time-honored tradition of self-experimentation in the medical profession. Arthur Firstenberg has the spirit of a physician, though he lacks the credentials, and is willing to subject himself to discomfort and some risk of actual illness, in order to obtain some quantitative experimental data that would document his response to the transmitters currently being tested.

What I feel that New York City should be doing is to simultaneously (a) determine how close an electrosensitive can come without discomfort to a cellular telephone transmitter mounted